

aid of a long-stroke module (course positioning) and a short-stroke module (fine positioning), which are not explicitly depicted in FIG. 1. However, in the case of a wafer stepper (as opposed to a step-and-scan apparatus) the mask table MT may just be connected to a short-stroke actuator, or may be fixed.

See the attached Appendix for the changes made to effect the above paragraph.

IN THE CLAIMS:

Please enter the following amended claims:

1. (Amended) A lithographic projection apparatus comprising:  
a radiation system for supplying a projection beam of radiation;  
a support structure for holding patterning structure, the patterning structure serving to pattern the projection beam according to a desired pattern;  
a substrate table for holding a substrate;  
a projection system for projecting the patterned beam onto a target portion of the substrate;  
a level sensor for measuring at least one of a perpendicular position and tilt about at least one parallel axis of a surface of an object held by one of the support structure and the substrate table, and generating a position signal indicative thereof, perpendicular referring to a direction substantially perpendicular to the said surface and parallel referring to a direction substantially parallel to said surface;  
a servo system responsive to said position signal for moving said object to a desired position; and  
a filter connected between said level sensor and said servo system for filtering said position signal, the filter having a transfer function representative of a difference between an actual measurement of the level sensor and an ideal measurement of the level sensor.

14. (Amended) A method of manufacturing a device comprising:  
providing a substrate that is at least partially covered by a layer of radiation-sensitive material;  
providing a projection beam of radiation;  
patterning the projection beam to produce a pattern in its cross-section;

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measuring at least one of a perpendicular position and tilt about at least one parallel axis of a surface of an object with a level sensor and generating a position signal indicative thereof, perpendicular referring to a direction substantially perpendicular to the said surface and parallel referring to a direction substantially parallel to said surface;

projecting the patterned beam of radiation onto a target portion of the layer of radiation-sensitive material while operating a servo system responsive to said position signal to maintain said object at said desired position; and

filtering said position signal to form a filtered position signal using a filter transfer function representative of a difference between an actual measurement of the level sensor and an ideal measurement of the level sensor before it is used by a servo system to control the position of the object.

See the attached Appendix for the changes made to effect the above claims.

Please enter the following new claims 16 and 17:

16. (New) A lithographic projection apparatus comprising:

a radiation system for supplying a projection beam of radiation;

a support structure for holding patterning structure, the patterning structure serving to pattern the projection beam according to a desired pattern;

a substrate table for holding a substrate;

a projection system for projecting the patterned beam onto a target portion of the substrate;

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a level sensor for measuring at least one of a perpendicular position and tilt about at least one parallel axis of a surface of an object held by one of the support structure and the substrate table, and for generating a position signal as a function of time indicative thereof, perpendicular referring to a direction substantially perpendicular to the said surface and parallel referring to a direction substantially parallel to said surface;

a servo system responsive to said position signal for moving said object to a desired position; and

a time domain filter connected between said level sensor and said servo system for filtering said position signal.

17. (New) A method of manufacturing a device comprising:

providing a substrate that is at least partially covered by a layer of radiation-sensitive material;

providing a projection beam of radiation;

patterning the projection beam to produce a pattern in its cross-section;

measuring at least one of a perpendicular position and tilt about at least one parallel axis of a surface of an object with a level sensor and generating a position signal as a function of time indicative thereof, perpendicular referring to a direction substantially perpendicular to the said surface and parallel referring to a direction substantially parallel to said surface;

projecting the patterned beam of radiation onto a target portion of the layer of radiation-sensitive material while operating a servo responsive to said position signal to maintain said object at said desired position; and

time domain filtering said position signal before it is used by said servo system to control the position of the object.